

WHAT IS CLAIMED IS:

1. A sampling station of an autosampler for preparing samples of a specimen for analysis by an analytical instrument, the sampling module comprising:

- a first flow path;
- a needle adapted to introduce a sample of the specimen into the first flow path;
- a standard injection system adapted to introduce a known quantity of standard into the first flow path to combine with the sample; and
- an exit port in line with the first flow path.

2. The sampling station of claim 1, wherein the internal standards system includes:

- a pressurized standard vessel containing a standard;
- a second flow path in line with the pressurized standard vessel; and
- at least one valve having a first inlet and outlet in line with the first flow path, a second inlet and outlet in line with the second flow path, and a guide member having an internal cavity of a known volume that is moveable between a first position and a second position;

wherein fluid communication is opened between the first inlet and outlet through the internal cavity and is blocked between the

second inlet and outlet when the guide member is in the first position, and fluid communication is opened between the second inlet and outlet and is blocked between the first inlet and outlet when the guide member is in the second position.

3. The sampling station of claim 2, wherein the internal standards system includes a restrictive tubing section in line with the second flow path for restricting the fluid communication between the second inlet and outlet when the guide member is in the second position.

4. The sampling station of claim 2, wherein the internal standards system includes a check valve in line with the second flow path.

5. The sampling station of claim 1, wherein the standard is selected from a group consisting of an internal standard, a calibration standard, and a matrix spike.

6. The sampling station of claim 1, wherein the needle includes:

a bottom stage having at least one aperture and an end;

a middle stage, proximate the bottom stage, having at least one aperture; and

a top stage, proximate the bottom and middle stages, having at least one aperture, wherein at least one of the bottom, middle, and top stages of the needle is in fluidic communication with the first flow path.

7. The sampling station of claim 6, wherein the needle further includes a heated block adapted to heat a portion of at least one of the bottom stage, the middle stage, and the top stage of the needle.

8. The sampling station of claim 1, including a pump for performing fluid extractions and distributions.

9. The sampling station of claim 8, wherein the pump includes a first syringe for large volume fluid extractions and distributions, and a second syringe for performing small volume fluid extractions and distributions.

10. The sampling station of claim 1, including control electronics adapted to control the internal standards system.

11. The sampling station of claim 2, including control electronics adapted to control at least one of the internal standards system and the valve.

12. The sampling station of claim 8, including

control electronics adapted to control at least one of the internal standards system and the pump.

13. An internal standards system for injecting a standard into a first flow path of a sampling station, the system comprising:

- a pressurized standard vessel containing a standard;

- a second flow path in line with the pressurized standard vessel; and

- a valve having a first inlet and outlet in line with the first flow path, a second inlet and outlet in line with the second flow path, and a guide member having an internal cavity of a known volume and moveable between a first position and a second position;

wherein fluid communication is opened between the first inlet and outlet through the internal cavity and is blocked between the second inlet and outlet when the guide member is in the first position, and fluid communication is opened between the second inlet and outlet through the internal cavity and is blocked between the first inlet and outlet when the guide member is in the second position.

14. The internal standards system of claim 13, including a restrictive tubing section in line with

the second flow path for restricting the fluid communication between the second inlet and outlet when the guide member is in the second position.

15. The internal standards system of claim 13, including a check valve in line with the second flow path to prevent the back flow of one of a headspace gas and standard from the pressurized standard vessel.

16. A vial autosampler for obtaining a sample from a selected one of a plurality of vials, the autosampler, comprising:

- a vial storage area adapted to store a plurality of vials;

- a sampling station adapted to receive the selected vial and perform automated analysis thereon; and

- a vial transporter adapted to transport the selected vial from the vial storage area to the sampling station;

wherein the sampling station includes means for automatically injecting at least one standard into a first flow path.

17. The vial autosampler of claim 16, including means for automatically extracting methanol.

18. The vial autosampler of claim 16, including

means for performing automatic dilution at a range from about 1:100 to approximately 1:1000.

19. The vial autosampler of claim 16, including means for automatically performing water sample extraction.

20. The vial autosampler of claim 16, including means for automatically injecting methanol.

21. The vial autosampler of claim 16, including means for providing methanolic sample extraction and dilution.

22. The vial autosampler of claim 16, including means for performing static head space gas extraction.

23. The vial autosampler of claim 16, including means for performing head space gas extraction.

24. A vial autosampler for performing both liquid and gas sample extractions from a specimen contained in a vial, the auto sampler comprising:

- an exit port;
- a needle adapted to inject and extract gas and liquids from the vial;
- a first flow path in line with the needle; and
- a first valve having a first position wherein

the first flow path is in line with the exit port and a second position wherein the first flow path is in line with a source of pressurized gas and cut off from the exit port;

whereby a headspace gas extraction of the vial is facilitated by the valve being in the first position, and a liquid extraction of the vial is facilitated by the valve being in the second position.

25. The autosampler of claim 24, wherein the valve includes:

- a first on-off valve in line with the exit port;
- and
- a second on-off valve in line with the first flow path.

26. The autosampler of claim 24, wherein the headspace gas extraction is a dynamic headspace gas extraction.

27. A vial autosampler comprising:

- a sampling station adapted to prepare and extract liquid and gas samples from a specimen contained in a vial; and
- a vial transporter adapted to present the vial to the sampling station;

wherein the sampling station includes means for

preparing and extracting liquid and gas samples of the specimen and means for presenting the samples to an analytical instrument for analysis.